for hip and knee osteoarthritis. Studies of TJR patient-reported outcomes and the scope of outcomes examined typically include pain and physical function with limited points of follow-up. The inter-relationships of social and community participation, a recognized and important concept to patients with TJR, with impairments (e.g. symptoms etc.) and activity limitations over the year of recovery following TJR have not been evaluated. This research addresses this gap.

Methods: Participants (hip: n=437; knee: 494) completed measures pre-surgery and at 10-14 days, 1, 3, 6 and 12 months post-surgery. The survey included impairments (physical: HOOS/KOOS symptoms and Chronic Pain Grade; mood: Hospital Anxiety and Depression Scale, fatigue); activity limitations (HOOS/KOOS activities of daily living + sports/leisure activities); and, participation restrictions (Jette Late Life Disability + Calderdale community mobility). Using structural equation modeling, we evaluated the longitudinal inter-relationships of patient-reported outcomes of impairments, activity limitations and participation restrictions. Measures of overall model fit were assessed.

Results: Hip group: age range from 31-86 years (mean=63) with 55% female; Knee group: age range from 35-88 years (mean=65) with 65% female. Significant improvements in the dimensions of physical impairments (PI), activity limitation (AL) and participation restriction (PR) scores were observed over time with the exception of mood. Both within and across time, PI was associated with AL and AL was associated with PR. However, improvements were lagged over time with earlier improvements in physical impairments and later improvements in participation. All analyses were adjusted for age, sex, BMI, hip vs. knee and low back pain.

Conclusions: Given the lagged inter-relationship of physical impairments, activity limitations and participation restrictions, the provision and timing of interventions that target all these areas are critical to maximizing outcome following TJR. Current care pathways that tend to focus on short term follow-up with limited attention to social and community participation should be re-evaluated in order to maximize people's outcome following TJR.

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LUMBAR DISC DEGENERATION AND GENETIC FACTORS ARE THE MAIN RISK FACTORS FOR LOW BACK PAIN: THE UK TWIN SPINE STUDY

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Purpose: Low back pain (LBP) is one of the most common conditions accounting for visits to primary care physician and work absenteeism. LDD has been proposed as a major cause of low back pain. MRI features of intervertebral lumbar disc degeneration (LDD) become almost universal in adults and, we have shown using a longitudinal study, deteriorate with age. However, the relative contribution of LDD, genetics and other risk factors for LBP remain unclear. The aim of this study was to explore the extent of association between risk factors for LBP in middle-aged UK female twins.

Methods: Unselected twins were recruited from the TwinsUK register (www.twinsuk.ac.uk) & invited to undergo sagittal T2-weighted MRI scan, nurse-led interview and questionnaire determination of LBP. LBP was defined as pain between 12th ribs and gluteal folds, duration >1 month with inability to perform activities of daily living & examined as a binary trait (affected *vs* non-affected) and a semi-quantitative trait (LBP_Q- number of daily tasks impaired) along with: age, bone mineral density (BMD) at lumbar spine and hip, body weight, smoking, manual work and physical exercise. LDD was summarized over 5 lumbar discs as a sum of scores for 4 composite traits (disc signal intensity, height, extension, anterior osteophytes) each scored 0-3. Statistical analysis was conducted in stages with multiple logistic regression and maximum likelihood based variance decomposition analyses for both LBP variables.

Results: A total of 2256 Caucasian females (32-72 years) were examined in this project comprising 378 and 716 of MZ and DZ twin pairs respectively, with 908 twins having MRI of the lumbar spine. The prevalence of severe and disabling LBP was 24.2%. No difference in LBP prevalence was found between MZ and DZ twins. LBP concordance rate was significantly higher in MZ *vs* DZ twins (p= 0.018). LDD score = median 12 (range 0- 53). The results for both LBP variables were in agreement, suggesting that genetic factors and LDD are the main risk factors for LBP. Considering the entire range of variation (maximum *vs* minimum) the odds ratio (OR) of LBP were: 20.5 ($p< 0.0001$) for LDD and 5.8 (p=0.001) for identical genetic background. Significant independent contribution to LBP was made by: hip BMD (OR=4.2, p=0.02) and physical exercise (OR=1.56, p=0.036). Age, weight, smoking and manual work were not significantly associated with either LBP variable, although they had a significant independent effect on LDD variation.

Conclusions: LDD score and genetic background are the main risk factors for LBP in this sample of women. The pathology of LDD is similar in men so similar predisposition might be expected. The higher prevalence of LBP in MZ conpared with DZ twins suggests a genetic component to LBP. This works confirms that MRI-determined LDD is a significant contributor to episodes of LBP and highlights the genetic component to both LDD and LBP. Furthermore, a novel contribution of BMD to LBP raises the possibility that bone density or turnover plays a role in back pain.

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DISC DEGENERATION OF THE UPPER LUMBAR DISCS IS ASSOCIATED WITH HIP PAIN

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Purpose: Hip pain has a number of possible causes. In older adults is, besides osteoarthritis of the hip, the presence of radiating pain from the higher lumbar spine one of the other possibilities. In textbooks it is suggested that hip pain can be 'referred' pain from the higher lumbar spine or dermatomal pain caused by impingement of the nerve roots. Currently within the literature, there have been no studies that have explored the association of self-reported hip pain and lumbar disc degeneration. We hypothesised that disc space narrowing in the higher lumbar spinal levels may be associated with pain in the hip region.

The purpose of this study was to explore the association of self-reported hip pain with the different individual radiographic features by vertebral level, including osteophytes and disc space narrowing.

Methods: Baseline data from a population-based study of people aged ≥ 55 years old (Rotterdam Study) were used (n = 2819), with a prevalence of self-reported hip pain of 11.6% (n = 328).

The intervertebral disc spaces (L1/2 to L5/S1) were evaluated for the presence and severity of anterior osteophytes and for disc space narrowing using a semi-quantitative score (grade 0-3). Logistic regression was used to determine the association between self-reported hip pain and these individual radiographic features of lumbar disc degeneration. Adjustments were made for age, gender, body mass index, low back pain and hip osteoarthritis.

Results: The presence of disc space narrowing grade ≥ 1 at level L1/L2 was significantly associated with hip pain in the last month, in men and women (men OR = 2.0; 95% CI: 1.1 to 3.8 and women OR = 1.7; 95% CI:

Association between disc space narrowing and hip pain, men

Men, N=1204	N (%)	Hip pain OR (95% CI)	Chronic hip pain OR (95% CI)
Nar L1-L2	107 (8.9)	2.0 (1.1 - 3.8)*	2.5 (1.3 - 5.0)**
Nar L2-L3	135 (11.3)	0.9 (0.4 - 1.8)	1.1 (0.5 - 2.4)
Nar L3-L4	153 (12.7)	1.1 (0.6 - 2.1)	1.1 (0.5 - 2.2)
Nar L4-L5	268 (22.2)	1.2 (0.7 - 2.0)	1.4 (0.8 - 2.5)
Nar L5-S1	408 (33.9)	0.7 (0.4 - 1.1)	0.6 (0.4 - 1.1)

Association between disc space narrowing and hip pain, women

Women, N= 615	N (%)	Hip pain OR (95% CI)	Chronic hip pain OR (95% CI)
Nar L1-L2	201 (12.5)	1.7 (1.1 - 2.5)*	1.8 (1.1 - 2.7)**
Nar L2-L3	307 (19.0)	1.6 (1.1 - 2.2)*	1.6 (1.1 - 2.3)*
Nar L3-L4	342 (21.1)	1.0 (0.7 - 1.4)	1.1 (0.7 - 1.5)
Nar L4-L5	526 (32.6)	0.9 (0.7 - 1.3)	1.0 (0.7 - 1.4)
Nar L5-S1	662 (41.0)	1.0 (0.7 - 1.3)	0.9 (0.7 - 1.2)

Association between disc space narrowing and hip pain

All, N=2819	N (%)	Hip pain OR (95% CI)	Chronic hip pain OR (95% CI)
Nar L1-L2	308 (10.9)	1.8 (1.3 - 2.5)**	2.0 (1.4 - 2.8)**
Nar L2-L3	442 (15.7)	1.4 (1.0 - 1.9)*	1.5 (1.1 - 2.1)*
Nar L3-L4	495 (17.6)	1.1 (0.8 - 1.3)	1.1 (0.8 - 1.5)
Nar L4-L5	794 (28.2)	1.0 (0.8 - 1.3)	1.1 (0.8 - 1.5)
Nar L5-S1	1070 (38.0)	0.9 (0.7 - 1.1)	0.8 (0.6 - 1.1)